WHAT IS CLAIMED IS:

1. A process for combating the corrosion by naphthenic acids of the metal walls of a refining plant, characterized in that it comprises the addition, to the hydrocarbon stream to be treated by the plant, of an effective amount of a compound of formula:

HS-B-COOR (I)

in which:

- B represents a saturated divalent hydrocarbon radical which can either be acyclic, in the linear or branched form, or cyclic and which comprises from 1 to 18 carbon atoms, preferably from 1 to 4; and

- R represents a hydrogen atom, or an alkali or alkaline earth metal, or an ammonium group, or an alkyl (linear or branched), cycloalkyl, aryl, alkylaryl or arylalkyl radical, said radical comprising from 1 to 18 carbon atoms, preferably 1 to 10, and optionally one or more heteroatoms.

2. The process as claimed in claim 1, characterized in that use is made, as compound of formula (I), of thioglycolic acid or of one of its esters, preferably an aliphatic ester.

3. The process as claimed in either of claims 1 and 2, characterized in that use is made of 2-ethylhexyl thioglycolate, isooctyl thioglycolate or methyl thioglycolate.

4. The process as claimed in one of claims 1 to 3,

characterized in that the amount of compound of formula (I) corresponds to a concentration, expressed as equivalent weight of sulfur, with respect to the weight of the hydrocarbon stream, ranging from 10 to 5000 ppm, preferably from 50 to 500 ppm.

5. The process as claimed in one of claims 1 to 4, characterized in that the hydrocarbon stream to be treated has a TAN of greater than 0.2 and preferably of greater than 2.

6. The process as claimed in one of claims 1 to 5, characterized in that it is carried out at a temperature of between 200 and 450°C and more particularly between 250 and 350°C.

7. The process as claimed in one of claims 1 to 6, characterized in that the hydrocarbon stream to be treated is chosen from a petroleum crude oil, an atmospheric distillation residue, gas oil fractions resulting from atmospheric and vacuum distillations, and a vacuum distillate and residue resulting from vacuum distillation.